SONOPANT DANDEKAR ARTS, V.S. APTE COMMERCE AND M.H. MEHTA SCIENCE COLLEGE, PALGHAR

Project Work

Prepared by

Internal Quality Assurance Cell

PROJECT ON WATER QUALITY

PROJECT NAME:

Comparative Study of Water Quality Assessment of Khad-Khad Dam and Jay Sagar Dam of Jawhar Taluka, Maharashtra

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21-22

Comparative Study 0f Water Quality Assessment of Khad-Khad Dam and Jay-Sagar Dam of Jawhar Taluka, Maharashtra

INTRODUCTION:

Water is prime natural resources a basic human need and a precious natural a set .fresh water resources are used for various purposes ,like agricultural ,household ,recreational ,environmental activities .water is most vital resources for all kinds of life on the earth and essential for the sustainability of the earth's ecosystem .

Now a day's fresh water has become a scare commodity due to over exploitation and pollution.

About 45,000 dams have been built worldwide with elevation of more than 15 meters and about 75% of them have been built within the last 50 years.

Water quality is one of the main factors to control health and the state of disease in people and animals. Lakes and rivers are the main source of drinking water, fishery, irrigation and energy production, which considerably depend on water quality.

Dams are man-made or artificial barriers usually constructed across a stream channel to impound water.

A dam is a barrier across flowing water that obstructs, directs or retards the flow, often creating a reservoir, lake or impoundment. It also acts as a great divider of flowing freshwater ecosystem. Dam refers to the reservoir rather than the structure. Dams are classified on the basis of structure, intended purpose and is elevation. Based on structure and the materials used, dams are classified as timber dam's embankment dam and are further categorized into several subtypes. According to the height, it can be categorized as large dams and major dams or alternatively as low dams, medium height dams and high dams. About 80%of the large dams in the world are made by earth and rocks, 4% being arch structure, and the rests are gravity dams.

Khad-Khad Dam is newly built on Khad-khad lake with 19°56'59° N latitude & 73°13' 53° E altitude to supply drinking and agricultural purposes nearby villages and full reservoir level is 444 meter

Jay Sagar Dam is built on Jay Sagar lake 19°55'41° N latitude & 73°13' 56° E altitude with to supply drinking and agricultural purposes nearby villages and full reservoir level is 438 meter.

AIM & OBJECTIVES:

AIM - Is to support and protect designated uses of freshwater, i.e. its use for drinking-water supply, livestock watering, irrigation, fisheries, recreation or other purposes, while supporting and maintaining aquatic life and/or the functioning of aquatic ecosystems.

OBJECTIVES:

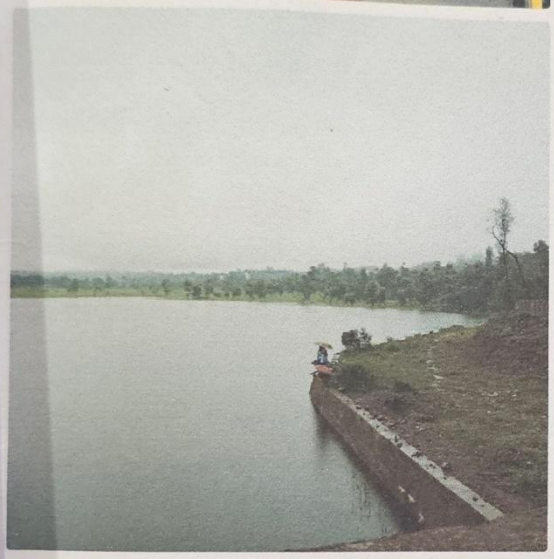
1. To assess the seasonal physical, chemical and bacteriological water quality of nature water bodies and drinking water sources in Khadkhad and Jay Sagar dams from Jawhar and Palghar districts in different seasons.
2. The supply of irrigation water for agriculture and control of floods.
3. With the development of technology and demand on water, dams have been used to fulfill other benefits like generation of hydroelectricity which served the towns gradually emerged in different locations along with the extension of agriculture.
4. The constriction of dams considers the natural ecology for their sustainable utility.

NEED OF THE RESEARCH PROPOSAL:

1. To play an important role in the development of water resources, especially in developing countries.

2. In order to develop and operate successful projects, a balance has to be struck between the requirements based on the needs of society, acceptable side effects and a sustainable environment.

3. The essential need for potable water, supply, production of food through irrigation, energy and power production, flood control, provision of recreational facilities are among the major benefits of dam.



METHODOLOGY:

Sample collection:

Water samples were collected from two dams early at morning in between 5.00 to 6.00 am. 5 liters sample were collected in bottle, sample were collected 3 times by Deeping bottle in

Water below 1-2 feet of the surface. Collected sample were preserve using Logo's iodine for

Further quantitative, qualitative and statistical analysis.

The water sample will be collected from two different dams namely

Site -1-Khad-Khad Dam

Site -2-Jay-Sagar Dam

The sample can be collected in 3 different months –August, November and February.

Water - Analysis -

The physical parameters such as pH and temperature are recorded on the spot and other chemical parameter like alkalify, hardness, acidity, BOD and COD

Can be recorded in the laboratory by standard method.

REVIEW:

Extensive research has been done in the area of prediction of Dams with time immemorial.

Choudhari, Rawtani and Vishwakarm (2011) examined the suitability of surface water from kerwa dam Kolar dam and Kaliasote dam of Bhopal by analyzing. The physico-chemical parameter such as temperature, pH, electrical conductivity, total hardness, calcium hardness, magnesium hardnees, solphate, floride and chemical oxygen demand (COD) and found that COD and total hardness was much higher than the maximum permissible limits as prescribed by WHO standards (1993).

Arya et al., (2013) investigated 50 water sample by using different even physical, chemical parameter and they concluded that the Parichha dam is comparatively polluted than the Sukma Dukma dam though more the water from both dam is permissible and suitable for drinking propose.

Tuna et al., (2013) studied on the two different portable and low cost approaches reserve to prove the effectiveness of the proposed system which shows the good water quality for the human need or propose by sturdily the physical, chemical and biological characteristics of water.

Yannwar et al., (2013) Analysed the water quality of Nagzari dam in Situatedi in Nagzari village of Kinwat (Maharashtra state, India). With the help of Physical and chemical parameters and also Identified the pollution sources of dam and they found that water quality is quite normal and but pollution is in this area is due to man-made activities .The dam water is utilized for social and important aspect like drinking, domestic, agriculture, irrigation and fishing etc.

Singh and Shrivastava (2014) analysed Yamuna river basin at five site viz. Sonepat, Palla, Nizamuddin Bridge, Agra Canal and Allahabad. By water quality parameter namely dissolved oxygen (DO), bio-chemical oxygen (BOD) and total coliform (TC) and ammonia and found that effluence intensity at the variously location has a major pollution contribution is at Nizamuddin bridge in Delhi with most critical water quality parameter as total coliform

Dhawde et al., (2018) analyzed 20 village in the Pune and Satara districts of Maharashtra of different water bodies using two different WQIs to understand which water quality is affected by faucal bacteria and we compound with each other in form of human health impact by the water Biological ,chemical and physical features.

Gupta et al.(2020) studies the water quality from the Narmada river in India. The sample were collected from different points and were analyzed to found that samples collected from post-monsoon be more excellent as compared to me-monsoon season.

EXPECTED RESULT:

The average values can be varied monthly in form of physicochemical parameters of water collected from different months of the Khad -Khad dam and Jay Sagar dam.

The impact of seasonal change on water quality has been extensively documented and has attracted widespread attention in recent years .Seasonal changes like rising temperature reduce dissolved oxygen levels in surface water. Scanty rainfall leads to less dilution of pollutants whereas frequent heavy spells of rainfall produces more pollution and sedimentation in river due to surface runoff.

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PROJECT RELATED TO PLANTS AND AIR POLLUTION

TO STUDY OF AIR POLLUTION TOLERANCE INDEX Of SOME COMMON ROAD SIDE PLANT SPECIES IN AN INDUSTRIAL (BOISAR ROAD) & NON INDUSTRIAL (DAPOLI) AREA OF AN PALGHAR, MAHARASHTRA, INDIA

PROJECT PROPOSAL SUMITTED TO
THE UNIVERSIY OF MUMBAI

THE DEGREE OF

MASTER OF SCIENCE IN BOTANY

UNDER THE GUIDANCE OF

Prof. Rudrakshi Raut

(ASSISTANT PROFESSOR OF BOTANY DEPARTMENT)

SUBMITTED BY

PRACHI VIOND BHONE

DEPARTMENT OF BOTANY

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M.Sc. Part-II Botany (2021-2022)

CONTENTS

INTRODUCTION

Although water and land pollution are very dangerous but air pollution burnt out to be a serious problem due to the industrialization and urbanization. Nowdays particulate matter is the biggest concern due to their undesirable impact on plant and animal. The recognition and classification of plants into tolerant as a sink for the pollutants in the city and developed habitats. Plant has a very close relationship with the nature and if altered conditions occur in the atmosphere it directly affects the physiology and biochemistry of the plant. Naturally plant act as an air purifier which confuse particulate matter and smoke from the atmosphere and cleans the air. The trees are being continuously exposed to the environment hence they attract gather and combine pollutants impinging on their leaves surface therefore they show noticeable or slight change depending on their sensitively level. It is an established fact that vegetation plays an important role in cleaning the atmosphere by absorbing certain toxic air pollutants from its surroundings and also abatement of air pollution. Sometimes physiological change takes place in plant before it visible to the foliage of the plant.

Pollution is an inevitable harmful by product of rapid industrialization and urbanization that is responsible for a variety of deleterious effects on all communities including humans, animals, and plants. It has been a major environmental concern since the beginning of industrialization, resulting a greater release of gaseous and particulate pollutants into the atmosphere.

Study Area

The present study was conducted in Industrial area (Boisar Road, MIDC) and non-industrial area (Dapoli). The study was carried out on Fifteen common roadside plant species growing along Industrial (Boisar Road, MIDC) and non- industrial (Dapoli) sites during winter season (Nov 2021). The distance beween Boisar road to Dapoli is 7 km. The climate of the area is typically Hot and Humid. The Minimum temperature in December and maximum in May and Both of area experiences distinct seasons. In Dapoli there is less traffic intensity and no industries present compared to Boisar Road so it is considered as non-industrial site.

REVIEW OF LITERATURE

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- Rai Prabhat Kumar[*], Panda Lalita L. S, Chutia Biku Moni and Singh M. Muni. Comparative Assessment of Air Pollution Tolerance index (APTI) in the Industrial (Rourkela) And Non Industrial Area (Aizawl) of India; An Eco-Management approach2013;13(09).

- Shrestha Sunita[1], Baral Badri[2,3], Dhital Narayan Babu[4,5,6] and Yang His-Hsien[5*]. Assessing Air Pollution Tolerance of Plant Species In Vegetation traffic barriers in Kathmandu Valley, Nepal 2021;31(03).

- Kuddus Mohammed , Kumari Rashmi and Ramteke Pramod. W. Studies on Air Pollution Tolerance of Selected Plants In Allahabad city, India 2011;30(10)

AIM & OBJECTIVES

Aim:

An attempt to study of Air pollution tolerance index of some common road side plant species in an industrial and non-industrial area.

Objectives:

The overall aim of the proposed research is to further understand the link between pollution levels and chemical composition. To examine relationship between vehicular air pollution and plants. The main objectives of this research project are to:

1. To determine the relative leaf water content (RWC) from polluted area of Boisar road

2. To determine the relative leaf water content (RWC) From unpolluted area of Dapoli

3. To measure the pH of various solutions using pH indicator and meter from polluted and unpolluted.

MATERIALS AND METHODS

The following plants were chosen from the above site, which are under pollutant and non-pollutants in Boisar Road and Dapoli areas.

Sr. No	Species	Family	Habit & Habitat
1	*Artocarpus heterophyllus* (Jackfruit)	Moraceae	Evergreen tree
2	*Azadirachta indica* (Neem)	Meliaceae	Mesophytic tree
3	*Butea monosperma* (Palash)	Fabaceae	Deciduous tree
4	*Carica papaya* (Papaya)	Caricaceae	Evergreen tree
5	*Delonix regia* (Gulmohar)	Fabaceae	Semi Evergreen tree
6	*Ficus benghalenis* (Bargad)	Moraceae	Very large tree
7	*Ficus racemosa* (Gular)	Moraceae	A large tree
8	*Ficus religiosa* (Pepal)	Moraceae	Deciduous tree
9	*Leuacaena leucocephala* (Safed Babul)	Fabaceae	Evergreen tree
10	*Mangifera indica* (Mango)	Anacardiaceae	Evergreen tree
11	*Saraca asoca* (Ashok)	Fabaceae	Evergreen tree
12	*Syzygium Cumini* (Jamun)	Myrtaceae	Evergreen tree
13	*Tamarindus indica* (Imli)	Fabaceae	Evergreen tree
14	*Tectona grandis* (Teak)	Lamiaceae	Deciduous tree
15	*Terminalia arjuna* (Arjuna)	Combretaceae	Large tree

Plant sampling and biochemical characteristic analysis

The plant species selected for the present study are *Artocarpus heterophyllus, Azadirachta indica, Butea monosperma, Carica papaya, Ficus racemosa, Delonix regia, Ficus benghalensis, Ficus religiosa, Leuacaena leucocephala, Mangifera indica, Saraca asoca, Syzygium Cumini, Tamarindus indica, Tectona grandis, Terminalia arjuna* variegate above both sites. The fresh leaf samples were collected in early morning from both sites industrial and non-industrial grown on the edge of the road almost with similar topography or condition and immediately brought to laboratory in polythene bag, kept in ice box for further analysis of various biochemical parameters such as leaf extracts pH, total chlorophyll, ascorbic acid. The APTI was determined by calculating these biochemical parameters. The air pollution tolerance index was calculated using the formula:

$$APTI = \frac{A\,(T + P) + R}{10}$$

Where,

A = Ascorbic acid (mg/g)

T= Total Chlorophyll (mg/g - fresh weight)

P= pH of the leaf extract.

R= Relative water content of leaf (%)

By combining the resultant APTI values with some relevant biological and socio-economic characters (plant habit, canopy structure, type of plant, laminar structure and economic value), the anticipated performance index (API) was calculated for different species. Based on these characters, different grades (+ or -) are allotted to plants. Different plants are scored according to their grades

EXPECTED RESULT

The extensive review has focussed on the measurement and monitoring of APTI and API of plant species growing alongside the Roads and industrial areas. These are useful tools to assess the tolerance level of plant species can be used as pollution sink and help in controlling and mitigating the adverse impacts from air pollution. Plants having high APTI and API value are selected for the green belt improvement and helpful in long term air pollution management in city and developed areas. On the basis of review many plant species are found to be tolerant towards air pollution and are suitable for planting around industrial area and roadside

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Project on Biodiversity Conservation

PROJECT NAME -

BIODIVERSITY CONSERVATION WITH REFERENCE TO RARE AND THREATENED PLANTS OF JAWHAR (MAHARASHTRA), INDIA.

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Guiding teacher- Mrs. Asmita Raut

21-22

Biodiversity Conservation with reference to Rare and Threatened plants of Jawhar taluka(Maharashtra), India.

INTRODUCTION

Biodiversity is an amalgam of two words biological and diversity. In general biodiversity is a complex and balenced network of different species, which are mutually in dependant on each other. Floral and faunal diversity are two facts components of biodiversities which covers the veriety and variability of species.Thus, present attempt has been mode for documentation of floral components and threatened or rare plants jawhar study area. These rare and threatened plants species has to be highlighted for their conservation.The present study conducted in the Jawhar block, Palghar, Maharashtra highlights few such observations releted to plants will be identified for its unique and different application.

Medicinal plants are nature's Gift to mankind & are rich ancident heritage of India . About 8,000 plants are recongized as medicinal plant that are being used by various treditional systems of medicions such as ayurved, hom, sdha, folk, Tibetan, modern & Unani. These treditional treatement have been largaly eroded due to local of encooragetion &recognition as well as rapid desruction of wild population of medicinal plants is absolutely Critical.

Plants of high medicinal volue, which where abudant in the recent past, are now threatened of their very existence and servival because of irrational exploitation to meet the ever increasing demand of thise plants in the preparation of different medicines. Some species are critically endangered in the wild.

Therefore it is essential and urgent steps to conserve the wealth of medicinal plant from jawhar taluka. As similar studies have not been documented from Jawhar taluka of Palghar district.

MATERIAL AND METHODS:

The present study will deals with many plant species observed for floristic data. Rare or endergerd plants will recorded from the study area. During the field survey verious criteria of IUCN for categorising threatened plant, viz extend of occurrence , area of occurency, number of individuals, probability of extinction etc.will be measured. Rarity of species will determined by field study,visual estimation and literature.In course of the collection reveal that few rare and endergered species are present in the study area.The perceptions will be recorded from jawhar area of The Jawhar blockwhich consisted of diverse stakholders such as local vaidus (Doctors),men ,elderly people as well as women .Thise approach helped to document the views of all the groups of the community about the plant species.The obervations will present the unic applications of wild plants other than ususal wild edible plants of dietary and medicinal singificance are recorded during thise study .The wild plant species will further identified with the help of Flora of Maharashtra (Almeida,2003).

AIMS & OBJECTIVES:

Aim –

The biodiversity is to conserve, protect, preserve and manage natural resources.

OBJECTIVES:

- To preserve the diversity of species.
- Sustainable utilization of species and ecosystem.
- To maintain life –supporting systems and essential ecological processes.
- To preserve all varieties of old and new flora, fauna and microbes.
- To protect natural habitats.

Local name	botanical name	habit
1. Sag/ Sagwan	Tectona grandis	Tree
2. Sissoo	Dalbergia Sissoo	Tree
3. Ukshi	Calopteris floribanda	Climber
4. Savar	Bombax ceiba	Tree
5. Pimpal	Ficus religiosa	Tree
6 . Payar	Ficus amplissima	Tree
7. Chillar	Caesalpinia decapetala	Climber
8. Behda	Terminalia belirica	Tree
9. Lokhand	Ixora nigricans	Shrub
10. Ain	Tarminalia alata	Tree

Fig ; Calopteris floribanda

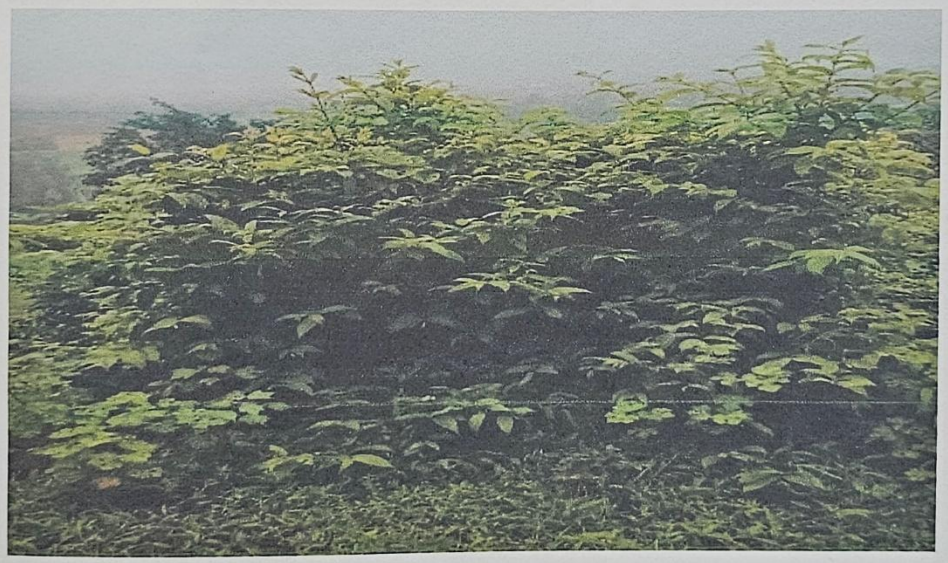

Fig ; Miliusa tomentosa

Fig ; Bauhinia malabarica

Fig : Tectona Grandis

NEED OF THE STUDY:

Biodiversity conservation prioritizes on establishing control measures that maintain the balance of natural ecosystems such as water balance, soil ecology, and genetic as well as species balance.The risk of plant extinctions because of human activities will be greatly diminished, and the genetic diversity of plants safeguarded.

The knowledge, innovations and practices of indigenous and local human communities that depend on plant diversity will be recognized, respected, preserved and maintained; and

People everywhere will be aware of the urgency of plant conservation and will understand that plants support their lives and that everyone has a role to play in plant conservation.

Jawhar Taluka lies in Western Ghats located at 19.92^0N; 73.23^0E and is bordered by Mokhada Block towerds east, Vikramgad Block towerds west, Wada Block towerds south and Trimbak Block towerds North. It is approch 473 meters above sea level. Being part of the Northern Western Ghats, the area is rich in biodiversity with a moist deciduous type of forest ecosystem. The region is Inhabited by different tribes like Thakur, Mahadev, Koli, varli, Katkari and Kokana which depend on different wild plant species for several purposes(Thamizoli and Bapisupati,2015).

REVIEW:

Puyraud J. and et al.,(2003) Analysed statistically the studies of endemic trees lists red data book of Indian plants(RDB) that threatened angiosperms, gymnosperms and pteridophytes. This tools used as an analytical tool & in comprehensive assessment vegetation. It is necessary to update RDB as it is urgently needed to provide a list or species that are likely to be threatened.

Choudhury B. and Khan M.L.,(2010) Studied the present status or Endengered species & Conservation requirement has natural population have been depleted due to over-harvesting of mature tree. Therefore Ex-situ conservation will required for effective conservation or all species for a prolonged duration.

Khairnar D.N and et al.,(2011) caried a sorvey in which North Sahyadri region of Nashik District 135 wild medicinal plants species belonging to 69 families have been considered as rare (04) , vornable(94), endengered(113), Exinct(01) & endemic (03) were found & required be regular monitoring & proper conservatin, preservation reducing & protection as they are from natural habitats.

Patil K.J and Patil S.V.,(2012) described the endangered plants which have been used for medicinal purposes by tribal to are human diseases & disorder from Jalgaon distict of North Maharashtra required a need to conserve the species for long term survival.

Lale Y. and et al.,(2014) descibed about the tribal cummunities which have been largaly dependant on the the wild plant for a various purposes such as food, medicinal, timber and so on there for several it is necessory doccument treditional knowledge about wild plant, moslty releted its dieteryand medicinal aspect. Scientifically validated plant thus coold provide solution for the feature.

Joshi S., and Shringi S.K,.(2014) presented 37 plant species with theire botanical name, local name red from the jawahar Sagar Sanctuarty area. Sanctuary which is the richest floristic region of Rajasthan As most of the plants where being as endangered species required to be conserved. It is noticed that Sanctuary is being a best conservation & leads to a smalter for large number of endangered & rare plant species.

Nipunage D.S and et al.,(2016) Nipunage surveyed 8 sacred groves from jawhar taluka of palghar district for floristic diversity. It has rich floristic diversity originally divided from thene disrict into thane & palghar. The Inhabitant never disturb the groves as they are firm in belief & mystic tolkloves that forest spirit can disturb their sanctily if they wormed the diversity of the Jawhar taluka.

Basnet D. and et al.,(2019) Reviewed the post research areas, identifies gaps for future research & Intervation and Collaboration is recommended of the for Estern Himalaya Landscape(FHL).the focussed on species (73.6%), followed by ecosystem(25%) & genetics(1.4%) with a greater lows on Charismatic megafauna followed by arthopods (15.6%), angiosperms(14.8%), Insects(13.4%) & birds (10.8%).

Sangale M.P and et al.,(2021) Which are decrase in number Uwestigated 30 endangered plants species due to increasing illegal acquistion of forest land, massive deforestation & urbanization so it plant require an effective monitoring & conservation strategy to be adopted for the sustainable use of endangerd species.

CONCLUSION:

In order to encourage and preserve the beauty of the place, humans must depend on healthy ecosystems as the human society cannot function without biodiversity benefits.

Healthy ecosystem depend on plant and animal species as theire foundations. When a species becomes end endargered, it ia a sign that the eosystem is slowly falling apart. Each species that is lost triggers the loss of other species within its ecosystem.

From this it conclud that Endargered species plant a very important role in the affects on biodiversity and its ecosystem .

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